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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/705,754

11/10/2003

Robert E. Viehland

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EXAMINER

YAARY, MICHAEL D

ART UNIT

PAPER NUMBER

2193

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
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3 MONTHS

03/13/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/13/2007.

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lhptoms@leehayes.com

Office Action Summary	Application No. 10/705,754	Applicant(s) VIEHLAND ET AL.	
	Examiner Michael Yaary	Art Unit 2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/10/2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>05/07/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

1. Claims 1-38 are pending in the application.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. As to claims 1-11 and 28, the claims are rejected under U.S.C.101 as they are not limited to tangible embodiments. In view of applicant's disclosure, specification page 17, lines 16-125, the "media" is not limited to tangible embodiments, instead being defined as including both tangible embodiments (e.g., ROM, RAM, volatile, non-volatile, etc.) and intangible embodiments (e.g., transmission media). As such, the claims are not limited to statutory subject matter and are therefore non-statutory. To overcome this type of 101 rejection the claims need to be amended to include only the computer storage media and not a transmission media or other intangible or non-functional media.
4. As to claims 12-19, they are rejected under U.S.C.101 as the claimed "device" is software per se, as it is not tangibly embodied, failing to recite any hardware as part of the device.
5. As to claims 20-27, the claims are rejected under U.S.C. 101 as they are directed to an arrangement, which appear to be software per se, as not being tangibly embodied, failing to recite any hardware as part of the arrangement.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-6, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bates et al. (hereafter Bates(I))(US Pat. 6,077,312) in view of Bates et al. (hereafter Bates(II))(US Pat. 6,493,834).

Bates(II) was cited in the IDS filed on 05/07/2004.

8. **As to claim 1**, Bates(I) discloses one or more processor-accessible media comprising processor executable instructions that, when executed, direct a device to perform actions (abstract, lines 1-5), comprising:

Determining if an instruction of a line of common intermediate language code meets predetermined related criterion (Column 2, lines 4-12 and lines 40-45 disclose in object-oriented type of programming, which resembles the type of code of common intermediate language, determining if instructions meet a predetermined criteria.); and

If so injecting a decision point in association with the instruction of the line of common intermediate language code (Column 3, lines 10-18 disclose utilizing breakpoints (decision points) with the instructions that meet predetermined criteria.)

9. Bates(I) does not disclose that the predetermined criterion is exception-related criterion and the decision point enables a decision as to whether an exception is to be thrown with respect to the instruction.

However, Bates(II) discloses that the predetermined criterion is exception-related criterion (Column 4, lines 19-22 disclose exception related instructions) and the decision point enables a decision as to whether an exception is to be thrown with respect to the instruction (column 6, lines 57-59).

10. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Bates(I), by utilizing exception related instructions as taught by Bates(II) for the benefit of creating more resourceful methods and tools used in the debugging and testing of computer programs (Bates(II), column 2, lines 14-17).

11. **As to claim 2**, Bates(II) discloses retrieving the line of common intermediate language code from a common intermediate language code program prior to the determining (Step 920, fetch next instruction, of figure 9 discloses retrieving the instruction before interpreting (determining).); retrieving another line of common

Art Unit: 2193

intermediate language code from the common intermediate language code program (Step 910 of figure 9 discloses checking for more lines of instructions, if so fetching or retrieving them.); and repeating the action of determining and the action of injecting for an instruction of other retrieved line of common intermediate language code (column 9, line 67-column 10, line 10).

12. **As to claim 3**, Bates(II) discloses determining if the instruction of the line of common intermediate language code is capable of throwing an exception (column 10, lines 5-10).

13. **As to claim 4**, Bates(II) discloses determining if the instruction of the line of common intermediate language code is capable of throwing an exception (column 10, lines 5-10) and is related to a pre-selected area (column 8, lines 58-67).

14. **As to claim 5**, Bates(II) discloses determining if the instruction of the line of common language code is capable of throwing an exception with reference to a common intermediate language code specification (column 8, lines 58-61 and column 9, lines 12-14).

15. **As to claim 6**, Bates(II) discloses injecting a bookmark entry (Column 7, lines 1-3 disclose a breakpoint manager, thus being analogous to the bookmark entry that discloses details of the instruction.)

16. **As to claim 8**, Bates(II) discloses injecting an identifier that uniquely identifies the decision point within the common intermediate language code that is being instrumented (column 11, lines 43-48).

17. **As to claim 11**, Bates(I) further discloses one or more storage media and one or more transmission media (column 4, lines 36-49 and column 5, lines 38-44)

18. Claims 7, 10, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bates(I) in view of Bates(II) as applied to claim 1 above, and further in view of Angel et al. (hereafter Angel)(US Pat. 6,314,558).

19. **As to claim 7**, Bates(I) and Bates(II) do not disclose injecting an instruction type indicator that indicates an instruction type for the instruction of the line of common intermediate language code.

However, Angel discloses injecting an instruction type indicator that indicates an instruction type for the instruction of the line of common intermediate language code (column 9, lines 28-32).

20. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Bates(I) and Bates(II), by indicating the

Art Unit: 2193

type of instruction, as taught by Angel, for the benefit of being able to identify appropriate instructions needed for use in the application of exceptions.

21. **As to claim 10**, Bates(I) and Bates(II) disclose repeating the actions of determining and injecting for a plurality of respective instructions of a plurality of respective lines of the code (Bates(II) column 9, line 64-column 10, line 10), and Angel discloses an instrumentation tool that produces instrumented common intermediate language code from common intermediate language code (column 3, lines 16-20).

22. **As to claim 28**, Bates(I) and Bates(II) disclose one-or more processor-accessible media comprising an instrumentation tool that is capable of determining whether respective instructions from common intermediate language code meet at least one predetermined criterion (Bates(I) column 2, lines 4-12 and lines 40-45 disclose in object-oriented type of programming which resembles the type of code of common intermediate language, determining if instructions meet a predetermined criteria.) and that is adapted to inject respective decision points into the common intermediate language code in association with the respective instructions that meet the at least one predetermined related criterion (Bates(I) column 3, lines 10-18 disclose utilizing breakpoints (decision points) with the instructions that meet predetermined criteria.); and that the predetermined related criterion is predetermined exception-related criterion (Bates(II) column 4, lines 19-22 disclose exception related instructions), each injected

Art Unit: 2193

respective decision point including an identifier of the injected respective decision point (Bates (II) column 11, lines 43-48) and a call to a program that can selectively cause an exception to be thrown with respect to the respective associated instruction (Bates(II) column 9, line 64-column 10, line 10.); and Angel discloses each injected respective decision point including an indication of an instruction type of the respective associated instruction (column 9, lines 28-32).

23. Claims 12-27, 29-31, 33, 34, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bates(II) in view of Angel .

24. **As to claim 12**, Bates (II) discloses code that includes a test couplet corresponding to a decision point and an associated instruction (Inherent in column 6, lines 57-59 and column 10, lines 14-36 as the decision point (breakpoint) always corresponds to an instruction, thus forming a couplet.) and to evaluate the test couplet to selectively decide whether to throw an exception with respect to the associated instruction (column 9, lines 12-14 and column 10, lines 5-10.)

25. Bates(II) does not disclose that the code is an instrumented common intermediate language code; a decision runtime library that is adapted to evaluate the test couplet; and a common language runtime component that interprets the decision point so as to call the decision runtime library prior to executing the associated instruction.

However, Angel discloses that the code is an instrumented common intermediate language code (column 3, lines 16-20); a decision runtime library that is adapted to evaluate the test couplet (column 18, lines 16-19); and a common language runtime component that interprets the decision point so as to call the decision runtime library prior to executing the associated instruction (column 18, lines 27-33).

26. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Bates(II), by incorporating a runtime library, as taught by Angel, for the benefit of being able to perform the evaluating and instrumentation methods during runtime.

27. **As to claim 13**, Bates(II) further discloses the instrumented common language code is in a binary form (column 19, lines 38-41).

28. **As to claim 14**, Bates(II) discloses the decision point comprises a bookmark entry (Column 7, lines 1-3 disclose a breakpoint manager, thus being analogous to the bookmark entry that discloses details of the instruction.), and wherein the bookmark entry comprises an identifier of the decision point (column 11, lines 43-48), and Angel discloses a call to the decision runtime library (column 18, lines 27-33) and an indication of an instruction type (column 9, lines 28-32).

Art Unit: 2193

29. **As to claim 15**, Bates(II) discloses to evaluate the test couplet to selectively decide whether to throw an exception responsive to the bookmark entry (column 6, lines 57-59 and column 10, lines 5-10), and Angel discloses the decision runtime library is further adapted to evaluate the test couplet (column 18, lines 10-33).

30. **As to claim 16**, it is rejected in the same manner as claim 15 above, in addition, Bates(II) further discloses whether to throw an exception based on throw exception logic (column 10, lines 37-55).

31. **As to claim 17**, Bates(II) further discloses to throw an exception based on at least one throw exception decision logic factor selected from the group comprising: Throwing an exception when first encountering a given decision point using an identifier of the given decision point (column 10, lines 37-55).

32. **As to claim 18**, Bates(II) discloses to evaluate the test couplet to selectively decide whether to throw an exception (column 6, lines 57-59 and column 10, lines 5-10), and Angel discloses decision runtime library is further adapted to evaluate the test couplet (column 18, lines 10-33) and that it responsive to the indication of the instruction type (column 9, lines 28-32).

33. **As to claim 19**, Bates(II) discloses modularizing by exception category (column 8, lines 60-62), and Angel discloses a modularized decision runtime library (column 18, lines 16-19).

34. **As to claim 20**, Bates(II) discloses an arrangement for enabling reliability testing of managed code (column 5, line 65-column 6, line 8), the arrangement comprising:

A plurality of decision points and decision means for deciding whether to throw an exception at each decision point of the plurality of decision points (column 9, line 64-column 10, line 36), and Angel discloses instrumenting means for instrumenting common intermediate language code to produce instrumented common intermediate language code (column 3, lines 16-20).

35. **As to claim 21**, Bates(II) discloses analysis means for analyzing whether individual instructions of a plurality of instructions can result in a failure (column 9, line 67-column 10, line 10) and injection means for injecting a respective decision point in association with each respective individual instruction (column 10, lines 14-36), and Angel discloses the plurality of instructions is of common intermediate language code (column 3, lines 16-20).

36. **As to claim 22**, Bates(II) discloses means for injecting a respective bookmark entry that identifies the respective decision point (Column 7, lines 1-3 disclose a breakpoint manager, thus being analogous to the bookmark entry that discloses details

of the instruction.) and means for injecting a call at least one module that is capable of evaluating the respective decision point with regard to whether a failure is to be induced (column 10, lines 14-36 disclose the induced failure due to the decision point, or thrown exception due to breakpoint).

37. Angel discloses means for injecting a respective bookmark entry that indicates an instruction type of the respective individual instruction (column 9, lines 28-32).

38. **As to claim 23**, Angel discloses common language runtime means for executing the instrumented common intermediate language code and the decision means in a runtime environment (abstract, lines 1-19).

39. **As to claim 24**, Bates(II) discloses the decision means at each decision point of the plurality of decision points being called (Column 9, line 64-column 10, line 10 disclose making a decision, by interpreting each instruction, if an exception throw is possible and thus inserting breakpoints (decision points).), and Angel discloses that the common language runtime means calls the decision means (column 3, line 66-column 4, line 8).

40. **As to claim 25**, it is rejected in the same manner as claim 16 above.

Art Unit: 2193

41. **As to claim 26**, Bates(II) further discloses the arrangement comprises at least one device (column 5, line 65-column 6, line 8).

42. **As to claim 27**, Bates further discloses one or more processor-accessible media (column 6, lines 34-45).

43. **As to claim 29**, Bates(II) discloses determining whether an instruction is capable of causing an exception (column 10, lines 3-10); and if so, injecting a decision point in association with the instruction to mark the instruction for evaluation during execution (column 10, lines 8-10 disclose implementing a breakpoint (decision point) if the instruction can throw an exception), the evaluation involving a decision as to whether a failure is to be induced with respect to the instruction (column 10, lines 14-36 disclose the induced failure due to the decision point, or thrown exception due to breakpoint), and Angel discloses the instruction is from common intermediate language code and the evaluation is during a common language runtime execution (Column 3, lines 16-20 discloses selecting portions of byte code to be instrumented. Common intermediate language code is a form of byte code).

44. **As to claim 30**, Bates(II) further discloses determining whether the instruction from the common intermediate language code is capable of causing an exception (column 10, lines 5-10) and is related to a pre-selected exception category (column 8, lines 58-62).

45. **As to claim 31**, Bates(II) discloses injecting a identifier of the decision point (column 11, lines 43-48), and Angel discloses injecting an indicator of an instruction type of the instruction (column 9, lines 28-32).

46. **As to claim 33**, Bates(II) further discloses one or more processor-accessible media comprising processor-executable instructions that, when executed, direct a device to perform the method recited in claim 29 (column 6, lines 34-45).

47. **As to claim 34**, Bates(II) discloses repeating the determining and injecting for a plurality of instructions (column 9, line 67-column 10, line 5), and Angel discloses that the plurality of instructions are from the common intermediate language code (column 3, lines 16-18 disclose instrumenting byte code) and producing instrumented common language code as a result of the repeating (column 3, lines 18-20).

48. **As to claim 36**, Bates(II) further discloses selectively deciding whether the execution is to fail at the decision point (column 10, lines 14-36 disclose the induced failure due to the decision point, or thrown exception due to breakpoint).

49. **As to claim 37**, Bates(II) further discloses if it is decided at the selectively deciding that the execution is to fail at the decision point, then choosing which exception of at least two exceptions is to be thrown (column 9, lines 12-14).

50. **As to claim 38**, Bates(II) further discloses if it is decided at the selectively deciding that the execution is to fail at the decision point, then including a failure in the execution of the common language runtime with respect to the instruction (column 10, lines 14-36).

51. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bates(I) in view of Bates(II) and further in view of Inamdar (US Pub. 2003/0149960).

52. **As to claim 9**, Bates(I) and Bates(II) disclose a program that is adapted to evaluate whether the exception is to be thrown with respect to the instruction (Bates(II) column 9, line 67-column 10, line 10).

53. Bates(I) and Bates(II) do not disclose injecting a call to a decision runtime library and the decision runtime library comprising the program that does the evaluating.

54. However, Inamdar discloses injecting a call to a decision runtime library and the decision runtime library comprising the program that does the evaluating ([0022], lines 1-18 and [0040], lines 6-8 disclose instrumenting code into instructions based on a probe and runtime library, thus reading on injecting a call to a runtime library in order to evaluate instructions).

55. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Bates(I) and Bates(II), by implementing a runtime library used in code instrumentation, as taught by Inamdar, for the benefit of performing the evaluating and instrumentation methods during runtime.

56. Claims 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bates(II) in view of Angel and further in view of Inamdar.

57. **As to claim 32**, Bates(II) and Angel do not disclose injecting a call to at least one module of a decision runtime library that is adapted to perform the evaluation.

However, Inamdar discloses injecting a call to at least one module of a decision runtime library that is adapted to perform the evaluation ([0022], lines 14-17).

58. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Bates(I) and Bates(II), by injecting a call to a module of a runtime library, as taught by Inamdar, for the benefit of performing the evaluating and instrumentation methods during runtime.

59. **As to claim 35**, Bates(II) and Angel disclose detecting the decision point (Bates(II), column 11, lines 43-48) in the instrumented common intermediate language (Angel, column 3, lines 16-20) during the execution thereof, and Inamdar discloses

Art Unit: 2193

calling at least one module of a decision runtime library, which is adapted to perform the evaluation, as a result of the detecting ([0022], lines 10-17)

Conclusions


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Yaary whose telephone number is (571) 270-1249. The examiner can normally be reached on Monday-Friday, 8:00 a.m - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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